WHAT IS CLAIMED IS

1. A heat treatment apparatus comprising:

a heater for heating an object-to-be-processed;

a temperature meter disposed in the heater;

a temperature estimator for computing an estimated temperature of the object-to-be-processed, based on a temperature metered result of the temperature meter;

an error estimator for computing an estimation error of the estimated temperature computed by the temperature estimator;

a temperature corrector for computing a corrected estimated temperature given by correcting the estimated temperature computed by the temperature estimator, based on the estimation error computed by the error estimator; and

a heating controller for controlling the heater, based on the corrected estimated temperature computed by the temperature corrector, and a temperature recipe stating a relationship between a set temperature and a time.

2. The heat treatment apparatus according to claim 1, further comprising:

a computation period determining unit for determining a computation period for periodically computing the estimated temperature by the temperature estimator and the estimation error by the error estimator.

3. The heat treatment apparatus according to claim 2, wherein

the computation period determining unit determines the computation period corresponding to an absolute value of a change rate of the set temperature.

4. The heat treatment apparatus according to claim 2, wherein

the computation period determined by the computation period determining unit is an integer time a shortest computation period.

5. The heat treatment apparatus according to claim 4, wherein

the temperature estimator includes a data interpolator for interpolating data for computing the estimated temperature when the computation period determined by the computation period determining unit is different from the shortest computation period.

6. The heat treatment apparatus according to claim 4, wherein

the error estimator includes data interpolator for interpolating data for computing the estimation error when the computation period determined by the computation period determining unit is different from the shortest computation period.

7. The heat treatment apparatus according to claim 1, wherein

the temperature meter includes a heater vicinity temperature meter for metering a temperature of a heater vicinity, and an object-to-be-processed vicinity temperature meter for metering a temperature of an object-to-be-processed vicinity, and

the temperature estimator computes the estimated temperature of the object-to-be-processed, based on a control signal for electric power to be fed to the heater, the heater vicinity temperature metered by the heater vicinity temperature meter, and the object-to-be-processed vicinity temperature metered by the object-to-be-processed vicinity temperature meter.

8. The heat treatment apparatus according to claim 7, wherein

the temperature estimator computes an estimated temperature of the object-to-be-processed vicinity, based on the control signal for electric power to be fed to the

heater, and the temperature of the heater vicinity metered by the heater vicinity temperature meter, and

the error estimator computes the estimation error, based on the temperature of the object-to-be-processed vicinity given by the object-to-be-processed vicinity temperature meter, the estimated temperature of the object-to-be-processed vicinity computed by the temperature estimator, and the temperature change rate of the set temperature.

9. A controller for controlling a heat treatment apparatus comprising a heater for heating an object-to-be-processed, and temperature meter disposed in the heater, the controller comprising:

a temperature estimator for computing an estimated temperature of the object-to-be-processed, based on a temperature metering result of the temperature meter;

an error estimator for computing an estimation error of the estimated temperature computed by the temperature estimator;

a temperature corrector for computing a corrected estimated temperature given by correcting the estimated temperature computed by the temperature estimator, based on the estimation error computed by the error estimator; and

a heating controller for controlling the heater, based on the corrected estimated temperature computed by the temperature corrector.

10. The controller for controlling a heat treatment apparatus according to claim 9, further comprising:

a computation period determining unit for determining a computation period for periodically computing the estimated temperature by the temperature estimator and the estimation error by the error estimator.

11. The controller for controlling a heat treatment apparatus according to claim 10, wherein

the computation period determining unit determines the

computation period corresponding to an absolute value of a change rate of a set temperature.

12. The controller for controlling a heat treatment apparatus according to claim 10, wherein

the computation period determined by the computation period determining unit is an integer time a shortest computation period.

13. The controller for controlling a heat treatment apparatus according to claim 12, wherein

the temperature estimator includes a data interpolator for interpolating data for computing the estimated temperature when the computation period determined by the computation period determining unit is different from the shortest computation period.

14. The controller for controlling a heat treatment apparatus according to claim 12, wherein

the error estimator includes a data interpolator for interpolating data for computing the estimation error when the computation period determined by the computation period determining unit is different from the shortest computation period.

15. A controller for controlling a heat treatment apparatus comprising a heater for heating an object-to-be-processed, the controller comprising:

a heating controller for controlling the heater in accordance with a temperature recipe stating a relationship between a set temperature and a time; and

a control period determining unit for determining a control period for periodically controlling the heater by the heating controller, based on a change rate of the set temperature.

16. A method for controlling a heat treatment apparatus comprising a heater for heating an object-to-be-processed,

the method comprising:

a temperature metering step of metering a temperature in the heater;

a temperature estimating step of computing an estimated temperature of the object-to-be-processed, based on a temperature metering result of the temperature metering step;

an error estimating step of computing an estimation error of the estimated temperature computed in the temperature estimating step;

a temperature correcting step of computing a corrected estimated temperature given by correcting the estimated temperature computed in the temperature estimating step, based on the estimation error computed in the error estimation step; and

a heating control step for controlling the heater, based on the corrected estimated temperature computed in the temperature correcting step, and a temperature recipe stating a relation ship between a set temperature and a time.

17. The method for controlling a heat treatment apparatus according to claim 16, further comprising a computation period determining step of determining a computation period for periodically computing the estimated temperature in the temperature estimating step and the estimation error computed in the error estimating step.

18. The method for controlling a heat treatment apparatus according to claim 17, wherein

the computation period determining step is for determining the computation period corresponding to an absolute value of a change rate of the set temperature.

19. The method for controlling a heat treatment apparatus according to claim 17, wherein

the computation period determined in the computation period determining step is an integer time a shortest computation period.

20. The method for controlling a heat treatment apparatus according to claim 19, wherein

the temperature estimating step includes a data interpolating step of interpolating data for computing the estimated temperature when the computation period determined in the computation period determining step is different from the shortest computation period.

21. The method for controlling a heat treatment apparatus according to claim 19, wherein

the error estimating step includes a data interpolating step of interpolating data for computing the estimation error when the computation period determined in the computation period determining step is different from the shortest computation period.

22. The method for controlling a heat treatment apparatus according to claim 16, wherein

the temperature estimating step includes a heater vicinity temperature estimating step of metering a temperature of the heater vicinity, and an object-to-be-processed vicinity temperature metering step of metering a temperature of the object-to-be-processed vicinity,

the temperature estimating step is for computing the estimated temperature of the object-to-be-processed, based on a control signal for electric power to be fed to the heater, the temperature of the heater vicinity metered in the heater vicinity temperature metering step, and the temperature of the object-to-be-processed vicinity metered in the object-to-be-processed vicinity temperature metering step.

23. The method for controlling a heat treatment apparatus according to claim 22, wherein

the temperature estimating step is for computing the estimated temperature of the object-to-be-processed vicinity, based on a control signal for electric power to

be fed to the heater, and the temperature of the heater vicinity metered in the heater vicinity temperature metering step, and

the error estimating step is for computing the estimation error, based on the temperature of the object-to-be-processed vicinity metered in the object-to-be-processed vicinity temperature metering step, and the estimated temperature of the object-to-be-processed vicinity computed in the temperature estimating step, and a temperature change rate of the set temperature.

24. A method for controlling a heat treatment apparatus comprising:

a heating control step of controlling the heater in accordance with a temperature recipe stating a relationship between a set temperature and a time; and

a control period determining step of determining a control period for periodically controlling the heater by the heating control step, based on a change rate of the set temperature.